

Customer No.: 31561
Application No.: 10/604,627
Docket No.: 11112-US-PA

Specification Amendment

Please amend the Specification as indicated hereafter:

[0006] FIG.1 shows a cross-section of a conventional RRAM device. This
5 RRAM device is a Type 1R1D (one resistor one diode) memory device. It includes a
word line (N type region) 102 in substrate 100, a plurality of P+ regions 104 and N+
region 106, wherein word line 102 and P+ region 104 constitute a diode. A dielectric
layer 114 is set on substrate 100. A plurality of memory units 107 are set in dielectric
layer 114, wherein each memory unit 107 includes a bottom electrode 108, a top
10 electrode 110, and a resistive film 112 between the bottom electrode 108 and the top
electrode 110. Furthermore, there is a word line contact window 116 in dielectric layer
114. One end of word line contact window 116 is electrically connected to N+ region;
the other end is electrically connected to a conducting line ~~116~~120 on the surface of
dielectric layer 114 so that the word line 102 can electrically connects with external
15 circuits. Furthermore, there is a bit line 118 formed on dielectric layer 114 for
electrically connecting with top electrode 110 of the memory unit 107.

[0038] The aforementioned embodiments choose a certain doped type of
semiconductor material for the substrate 300, the word line 302, the reset line 304, and
20 the doped region 306. One skilled in the art may use a semiconductor material doped
with a different type of dopants to implement this invention. For example, one skilled
in the art can use P-type substrate 300, a N-type word line 302, a P+ doped reset ~~line~~
eline 304 and a N+ doped region 306.

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[0044] The a patterned conducting layer is formed on dielectric layer 416 to form the bit line 426 and the conducting lines 428 and 430. The bit line 426 is positioned perpendicular to the extension of word line 402 and connects with the memory units 414 in the same row. Furthermore, the conducting lines 428 and 430 are coupled to the word line contact window 418 and the reset line contact windows 420 respectively to make the word line 402 and the reset line 404 electrically connect with the external circuits.